

Application No. 10/607,982
Amendment A dated September 20, 2004
Reply to Office Action mailed March 18, 2004

REMARKS

The present Amendment is in response to the Examiner's Office Action mailed March 18, 2004. Claims 1, 10, and 18 are amended and new claims 21-24 are added. Claims 1-24 are now pending in view of the above amendments. Support for the claim amendments and new claims can be found in the application as filed, for example in Figs. 3, 5 and 13.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, unless otherwise noted Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

I. Rejections Under 35 U.S.C. §102 (a/b/e)

The Examiner rejects claims 1, 2, 4-7, 10, 11, and 13-16 under 35 U.S.C. § 102(a) and (e) as being anticipated by *Ouchi* (United States Patent No. 6,597,713) and also as being anticipated by *Peterson* (United States Patent No. 6,661,084).

Because neither of *Ouchi* and *Peterson* teach or suggest each and every element of the rejected claims as presently recited, Applicant respectfully traverses this rejection in view of the following remarks.

Independent Claim 1 and Dependent Claims 2 and 4-7

Ouchi teaches a cup shaped ceramic heat sink 140 (referred to in the Office Action as a "submount") encompassing an electrode 7 and a laser substrate 21 (collectively referred to in the Office Action as "can"). The terminal ends of the "submount" and the "can" are in contact with a wiring electrode 112. The wiring electrode 112 is mounted on wiring substrate 130 (referred to

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in the Office Action as "window"). Mounted integrally on the electrode 7 are a series of layers that form a VCSEL array. As seen in Figure 19, a cavity is formed between the VCSEL array and the wiring substrate with the conductive trace 112 and solder (labeled solder 13 in Figure 17) forming the lateral walls thereof.

Peterson teaches a pair of stacked ring-shaped electrically insulating plates 30, 16 (referred to in the Office Action as "submount 30" and "can 16"), with plate 30 positioned around the circumference of a microelectronic device 100 in a microelectronic package 8. A window 26 is either sealed to plate 16 (Fig. 3A) or embedded in grooves therein (Fig. 3B). In Figure 3A, a cavity 22 is formed between microelectronic device 100 and window 26 with plate 16 on the lateral surfaces therebetween.

In direct contrast to *Ouchi* and *Peterson*, claim 1 recites, *inter alia*, "wherein said cavity is hermetically sealed and comprises said window on a first surface, said submount on an opposing second surface, and said can on the surfaces interconnecting said window and said submount." *Ouchi* teaches only that window 130 and the VCSEL array are on opposite sides of the cavity with the conductive trace 112 and solder (labeled solder 13 in Figure 17) forming the interconnecting walls thereof. *Peterson* is similarly deficient, teaching that the cavity is defined by a window opposite a microelectronic device with a plate on the lateral surfaces thereof. The "submount" 30 in *Peterson* is in no way a part of defining the cavity.

Since *Ouchi* and *Peterson* do not teach the device being claimed in claim 1 in this application, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 102(a) and (c) be withdrawn. In addition, for at least the foregoing reasons with respect to claim 1, Applicant respectfully asserts that claims 2 and 4-7 are also not anticipated by *Ouchi* or *Peterson*. Accordingly, Applicants respectfully request that the rejection of claims 2 and 4-7 under 35 U.S.C. § 102(a) and (c) also be withdrawn.

Independent Claim 10 and Dependent Claims 11 and 13-16

In addition to the foregoing identified teachings of *Ouchi*, *Ouchi* also teaches that the conductive traces run along the surface of wiring substrate 130, contacting a terminal edge of laser substrate 21 (Fig. 19). *Peterson* similarly teaches that the conductive traces run along a

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surface between plate 30 and plate 16 to an electrical lead 40 on the side of the package. In one embodiment of *Peterson*, a conductive lead passes through the "can" (plate 16).

In contrast, present claim 10 recites, *inter alia*: "a plurality of thru-via conductive contacts passing through said submount." As noted in the previous paragraph, neither of *Ouchi* and *Peterson* disclose this structure.

In addition, similar to claim 1, claim 10 recites, *inter alia*: "wherein said cavity is hermetically sealed and comprises said window on a first surface, said submount on an opposing surface, and said can on the surfaces interconnecting said window and said submount." *Ouchi* and *Peterson* are just as deficient as to this limitation in claim 10 as they are to the similar limitation in claim 1. Particularly, neither reference teaches or discloses a submount defining part of the cavity. In addition, *Ouchi* does not even teach a can forming part of the cavity.

Since *Ouchi* and *Peterson* do not teach the device being claimed in claim 10 of this application, Applicants respectfully request that the rejection of claim 10 under 35 U.S.C. § 102(a) and (e) be withdrawn. In addition, for at least the foregoing reasons with respect to claim 10, Applicant respectfully asserts that claims 11, and 13-16 are also not anticipated by *Ouchi* or *Peterson*. Accordingly, Applicants respectfully request that the rejection of claim 10, 11, and 13-16 under 35 U.S.C. § 102(a) and (e) also be withdrawn.

II. Rejections Under 35 U.S.C. § 103

Independent Claim 18 and Dependent Claims 19 and 20

The Examiner rejects claims 18-20 under 35 U.S.C. § 103 as being unpatentable over *Ouchi* in view of general knowledge in the art.

Applicant traverses the Examiner's rejection of claims 18-20 for obviousness on the grounds that the references – either individually or in combination – fail to teach or suggest each and every element of the rejected claims. By contrast to the presently claimed invention, and as previously discussed, *Ouchi* does not teach or suggest a "cavity comprising said window on a first surface, said submount on an opposing surface, and said support on the surfaces interconnecting said window and said submount" as is presently claimed. The Office Action indicates no general knowledge in the art to overcome this deficiency.

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In addition, *Ouchi* does not teach or suggest the "support" as presently recited in claim 18, particularly: "a support comprising a central body, parallel legs, and guide pins, wherein said support is attached to said submount and forms a cavity with an opening for light to pass through." Rather, the structures in *Ouchi* the Office Action identifies as analogous to the recited support (electrode 7 and laser substrate 21) neither contact a cavity nor are related to structures analogous to parallel legs or guide pins. In fact, as is clear from Fig. 19, the electrode 7 and laser substrate 21 are completely separated from the identified fiber supporting substrate 141 by wiring substrate 130.

Additionally, Applicants do not concede that it is within the general knowledge in the art to make such a radical alteration to *Ouchi* as to remove fiber supporting substrate 141 and portions of "window" 130, replacing them with guide pins and parallel legs as part of electrode 7 and laser substrate 21. In addition, it is difficult to see how electrode 7 and laser substrate 21 could be modified to be suitable for mounting thereon a flexible ribbon-type optical cable as recited in claim 18.

In the event the Examiner disagrees with the foregoing, the Examiner is respectfully requested to identify specific teachings in the prior art to the contrary.

In view of *Ouchi*'s failure to teach the limitations of claim 18, Applicant submits that the Examiner has failed to set forth a *prima facie* case for obviousness of the presently recited claim 18 and respectfully requests that the rejection be withdrawn. Additionally, for at least the reasons that claim 18 is non-obvious over *Ouchi* in view of the general knowledge of the art, claims 19-20 are similarly non-obvious over *Ouchi* in view of the general knowledge of the art. Applicants therefore request the withdrawal of the rejection of these claims.

In section 11 of the Office Action, the Examiner rejects claims 18-20 under 35 U.S.C. § 103 as being unpatentable over *Peterson* in view of *Recktenwald et al.* (United States Publication No. US2003/0015776).

Applicants traverse this rejection for obviousness on the grounds that the references – either individually or in combination – fail to teach or suggest each and every element of the rejected claims. By contrast to the presently claimed invention, neither reference teaches or suggests a "cavity comprising said window on a first surface, said submount on an opposing surface, and said support on the surfaces interconnecting said window and said submount" as is

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presently claimed. As previously noted, *Peterson* teaches that the cavity is defined by a window opposite a microelectronic device with a plate on the lateral surfaces thereof. The "submount" 30 in *Peterson* is in no way a part of defining the cavity. *Recktenwald* cannot overcome this deficiency, in part because it does not disclose a cavity or a support as these terms are recited in the claim.

Additionally, *Recktenwald*, which is cited for disclosing a support having parallel legs 28 and guide pins 30, does not teach or suggest: "a support comprising a central body, parallel legs, and guide pins, wherein said support is attached to said submount and forms a cavity with an opening for light to pass through;" or "wherein a flexible ribbon-type optical cable having a plurality of optical fibers and openings that align with the guide pins can be mounted between said parallel legs, said guide pins fitting into said openings when the flexible optical cable is attached to said support." Initially, assuming *arguendo* that *Recktenwald* teaches a support having "parallel legs" 28 and "guide pins" 30, there are still no structures that correspond to a "central body." In addition, such a support (parallel legs 28 and guide pins 30) cannot be modified to form a cavity by attachment to a submount to "form[] a cavity with an opening for light to pass through" because it is on the opposite side of the VCSEL 10 from where light is emitted.

Further, as is evident from Figs. 3 and 4, *Recktenwald* teaches a fiber cable 24 that attaches to a first surface of a VCSEL 10. The *opposing* surface of the VCSEL is attached to a laminated structure 6 having plated through holes 8 therein for receiving press fits tails 30 that are attached to a receptacle connector, which in turn connects to a plug header 26. In other words, the "pins" and "parallel legs" in *Recktenwald* do not relate to attaching a housing to a "flexible ribbon-type optical cable."

Accordingly, for at least the foregoing reasons, Applicant submits that the Examiner has failed to set forth a *prima facie* case for obviousness of the presently recited claim 18. Applicant also submits that, for at least the foregoing reasons, claims 19 and 20, which depend from claim 18, are also patentable over the cited references.

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Other Rejected Dependent Claims

The Examiner also rejects: claims 3 and 12 under 35 U.S.C. § 103 as being unpatentable over *Ouchi* or *Peterson* in view of *Brand et al.* (United States Patent No. 6,604,488); claims 8 and 17 under 35 U.S.C. § 103 as being unpatentable over *Ouchi* or *Peterson* in view of *Jansson et al.* (United States Patent No. 6,594,050); and claim 9 under 35 U.S.C. § 103 as being unpatentable over *Ouchi* or *Peterson* in view of *Takagi* (United States Publication No. 2003/0127661 A1);

These rejected claims 3, 8, 9, and 12 each depend from one of independent claim 1 or 10. Because claims 3, 8, 9, and 12 each therefore include the limitations of either claim 1 or claim 10, claims 3, 8, 9, and 12 are patentable over the cited references for at least the reasons presented hereinabove with respect to the independent claims. Accordingly, the rejections of claims 3, 8, 9, and 12 are now moot, and the removal of the rejection of claims 3, 8, 9, and 12 under 35 U.S.C. § 103 is respectfully requested.

III. New Claims

New claims 21-24 have been added to recite additional patentable features of the invention that are not taught or suggested by the prior art of record, namely that: "second surface further comprises a plurality of opto-electronic devices" in claim 21 and that the "submount is substantially planar" in claims 22-24. Support for these new claims can be found, for example, in Figures 4, 6, and 13 of the application as filed. Accordingly, the prompt allowance of these claims is respectfully requested.

IV. Amendments for Clarity

Claims 1, 10, and 18 have been amended for clarity to recite some form of the limitation, "a transparent window in or covering [[over]] said opening." This amendment does not narrow the claims and is not in response to any rejection or prior art concerns. Rather, this amendment is made to clarify that the recited window is not limited to being solely "over" or "in" the opening. As seen in the Figures 3-13, the window according to the invention can be set in a variety of positions with respect to the can/support so long as it is attached to the can/support. The previous language may have been ambiguous and so the claims were amended.

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In addition, claim 18 has been amended for clarity to delete the recitation of: "a flexible optical cable having a plurality of optical fibers and openings that align with the guide pins." Instead, claim 18 now recites, "wherein a flexible ribbon-type optical cable having a plurality of optical fibers and openings that align with the guide pins can be mounted ~~the flexible optical cable mounts~~ between said parallel legs." This amendment clarifies that the flexible cable is not, in fact, a part of the opto-electronic housing, but is rather a device that can be mated with the housing. This is a broadening amendment that does not further limit the scope of the claim.

CONCLUSION

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 20th day of September, 2004.

Respectfully submitted,



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